WHAT IS CLAIMED IS:

1. A method implementing a light source with wavelength-selective output is characterize by:

externally injecting a narrow-band incoherent light into a F-P LD;

suppressing the laisng modes outside of the bandwidth of injected incoherent light; and

locking the output wavelength of said F-P LD within bandwidth of injected incoherent light.

2. A method as claimed in claim 1,

wherein said incoherent light is generated from any one of an optical fiber amplifier, a light emitting diode, or a super-luminescent diode.

3. A light source comprising:

an incoherent light source that generates a broadband incoherent light;

an optical filter that is connected to said incoherent light source and slices said broadband incoherent light to produce a narrow-band incoherent light;

an optical circulator that is connected to said optical filter, routes said narrow-band incoherent

light to a F-P LD, separates the output of said F-P LD from the said narrow-band incoherent light; and

said F-P LD that is connected said optical circulator, emits wavelength-selective output locked by said narrow-band incoherent light, and can be modulated directly.

4. A light source as claimed in claim 3 characterized by improving the extinction ratio of the modulated signal by further comprising:

a polarization controller that is connected between said optical circulator and said F-P LD; and,

a polarizer that is connected at the output end of said optical circulator.

5. A light source comprising:

an incoherent light source that generates a broadband incoherent light;

an optical filter that is connected to said incoherent light source and slices said broadband incoherent light to produce a narrow-band incoherent light;

an optical power splitter that is connected to said optical filter, routes said narrow-band incoherent light to a F-P LD, separates the output of said F-P

LD from the said narrow-band incoherent light; and

said F-P LD that is connected said optical power splitter, emits wavelength-selective output locked by said narrow-band incoherent light, and can be modulated directly.

6. A light source as claimed in claim 5 characterized by improving the extinction ratio of the modulated signal by further comprising:

a polarization controller that is connected between said optical power splitter and said F-P LD; and

a polarizer that is connected at the output end of said optical power splitter.

7. Multi-channel WDM light sources comprising:

an incoherent light source that generates a broadband incoherent light of which bandwidth is within the free spectral range(FSR) of a (de)multiplexer;

an optical circulator that is connected to said incoherent light source, routes said broadband incoherent light to said (de)multiplexer, and separates the output of said (de)multiplexer from the said broadband incoherent light;

said (de)multiplexer that is connected said optical

circulator, receives said broadband incoherent light, slices spectrally said broadband incoherent light to produce plurality of narrow-band incoherent lights, and multiplexes the outputs of plurality of F-P LDs; and

said plurality of F-P LDs that are connected at the output ends of said (de)multiplexer, emit wavelength-selective output locked by said narrow-band incoherent lights, and can be modulated directly.

8. Multi-channel WDM light sources as claimed in claim 7 characterized by improving the extinction ratio of the modulated signals by further comprising:

plurality of polarization controllers that are connected between the output ends of said (de)multiplexer and said plurality of F-P LDs; and

a polarizer that is connected at the output end of said optical circulator.

9. Multi-channel WDM light sources comprising:

an incoherent light source that generates a broadband incoherent light of which bandwidth is within the free spectral range(FSR) of a (de)multiplexer;

an optical power splitter that is connected to said

incoherent light source, routes said broadband incoherent light to said (de)multiplexer, and separates the output of said (de)multiplexer from the said broadband incoherent light;

said (de)multiplexer that is connected said optical power splitter, receives said broadband incoherent light, slices spectrally said broadband incoherent light to produce plurality of narrow-band incoherent lights, and multiplexes the outputs of plurality of F-P LDs; and

said plurality of F-P LDs that are connected at the output ends of said (de)multiplexer, emit wavelength-selective output locked by said narrow-band incoherent lights, and can be modulated directly.

10. Multi-channel WDM light sources as claimed in claim 9 characterized by improving the extinction ratio of the modulated signals by further comprising:

plurality of polarization controllers that are connected between the output ends of said (de)multiplexer and said plurality of F-P LDs; and

a polarizer that is connected at the output end of said optical power splitter.

11. An optical transmission system for upstream

signal transmission in a passive optical network comprising a central office, a remote node that is connected to said central office with a single optical fiber, and plurality of optical network units that are connected to said remote node with plurality of optical fibers,

wherein said central office comprises:

an incoherent light source that generates a broadband incoherent light of which bandwidth is within the free spectral range(FSR) of a (de)multiplexer installed in said remote node;

a demultiplexer that receives and demultiplexes said upstream signal;

plurality of receivers that are connected at the output ends of the said demultiplexer; and

an optical circulator that is connected to the said incoherent light source and routes said broadband incoherent light to said optical fiber connecting said central office and said remote node and said upstream signal delivered through said optical fiber to said demultiplexer,

said remote node comprises said (de)multiplexer that receives said broadband incoherent light transmitted from said central offices, slices spectrally said broadband incoherent light to produce

plurality of narrow-band incoherent lights, and multiplexes the upstream signal transmitted from said optical network units through said plurality of optical fibers, and

said plurality of optical network units comprise F-P LDs that are connected at the output ends of said (de)multiplexer in remote node, emit wavelength-selective output locked by said narrow-band incoherent lights, and can be modulated directly.

12. An optical transmission system for upstream signal transmission in a passive optical network comprising a central office, a remote node that is connected to said central office with a single optical fiber, and plurality of optical network units that are connected to said remote node with plurality of optical fibers,

wherein said central office comprises:

an incoherent light source that generates a broadband incoherent light of which bandwidth is within the free spectral range(FSR) of a (de)multiplexer installed in said remote node;

a demultiplexer that receives and demultiplexes said upstream signal;

plurality of receivers that are connected at the

output ends of the said demultiplexer; and

an optical power splitter that is connected to the said incoherent light source and routes said broadband incoherent light to said optical fiber connecting said central office and said remote node and said upstream signal delivered through said optical fiber to said demultiplexer,

said remote node comprises said (de)multiplexer that receives said broadband incoherent light transmitted from said central offices, slices spectrally said broadband incoherent light to produce plurality of narrow-band incoherent lights, and multiplexes the upstream signal transmitted from said optical network units through said plurality of optical fibers, and

said plurality of optical network units comprise F-P LDs that are connected at the output ends of said (de)multiplexer in remote node, emit wavelength-selective output locked by said narrow-band incoherent lights, and can be modulated directly.

13. An optical transmission system for upstream signal transmission in a passive optical network comprising a central office, a remote node that is connected to said central office with two optical

fibers, and plurality of optical network units that are connected to said remote node with plurality of optical fibers,

wherein said central office comprises:

an incoherent light source that generates a broadband incoherent light of which bandwidth is within the free spectral range(FSR) of an (de)multiplexer installed in said remote node and is connected to one of said two optical fibers connecting said central office and said remote node;

a demultiplexer that is connected to the other optical fiber connecting said central office and said remote node, receives, and demultiplexes said upstream signal;

plurality of receivers that are connected at the output ends of the said demultiplexer,

said remote node comprises:

an optical circulator that route the broadband incoherent light delivered from said central office through said optical fiber to said (de)multiplexer and said upstream signal from said (de)multiplexer to the central office through said the other optical fiber; and

said (de)multiplexer that receives said broadband incoherent light, slices spectrally said broadband

incoherent light to produce plurality of narrow-band incoherent lights, and multiplexes the upstream signal transmitted from said optical network units through said plurality of optical fibers, and

said plurality of optical network units comprise F-P LDs that are connected at the output ends of said (de)multiplexer in remote node, emit wavelength-selective output locked by said narrow-band incoherent lights, and can be modulated directly.

14. An optical transmission system for upstream signal transmission in a passive optical network comprising a central office, a remote node that is connected to said central office with two optical fibers, and plurality of optical network units that are connected to said remote node with plurality of optical fibers,

wherein said central office comprises:

an incoherent light source that generates a broadband incoherent light of which bandwidth is within the free spectral range(FSR) of an (de)multiplexer installed in said remote node and is connected to one of said two optical fibers connecting said central office and said remote node;

a demultiplexer that is connected to the other

optical fiber connecting said central office and said remote node, receives, and demultiplexes said upstream signal;

plurality of receivers that are connected at the output ends of the said demultiplexer,

said remote node comprises:

an optical power splitter that route the broadband incoherent light delivered from said central office through said optical fiber to said (de)multiplexer and said upstream signal from said (de)multiplexer to the central office through said the other optical fiber; and

said (de)multiplexer that receives said broadband incoherent light, slices spectrally said broadband incoherent light to produce plurality of narrow-band incoherent lights, and multiplexes the upstream signal transmitted from said optical network units through said plurality of optical fibers, and

said plurality of optical network units comprise F-P LDs that are connected at the output ends of said (de)multiplexer in remote node, emit wavelength-selective output locked by said narrow-band incoherent lights, and can be modulated directly.